**PhD student - Early Stage Researcher (ESR) (f/m)**

INSpiRE-MED (Integrating Magnetic Resonance Spectroscopy and Multimodal Imaging for Research and Education in MEDicine)

**ESR 2: Maximize metabolic information in a multi-parametric study at ultra-high field, from pre-clinical to clinical validations**

**Location**: CIBM/EPFL, Lausanne, Switzerland

**Gross salary (pre-employer/employee and income tax)**: 3270 €/month [110%, meaning 3597 €/month]

**Mobility allowance (pre-employer/employee and income tax)**: 600 €/month

**Family allowance (pre-employer/employee and income tax)**: 500 €/month (if applicable)

**Start date**: between January and October 2019

**Duration**: 36 Months

**Project description**: This position is one of the 15 ESR positions of the INSpiRE-MED European Training Network, which focuses on the development of Magnetic Resonance Spectroscopy (MRS) and MR Spectroscopic Imaging (MRSI) combined with Positron Emission Tomography (PET), enhanced by machine learning techniques.

The main objective of this study is to maximize the metabolic information in a multi-parametric approach at ultra-high field, from pre-clinical to clinical validations. We will first develop a multimodal MRS(I) approach for maximizing the metabolic content using optimized determination of diffusion proprieties of metabolites combined with optimized sequences for specific metabolites and macromolecules detection, with proton (1H) and hetero-nuclear MRS (31P) at high field. We will then evaluate the benefits of improved multimodal MRS in clinical and pre-clinical applications: extension of diagnostic evaluation from tissue structure characterization to changes in brain metabolites at macro- and micro-scale.

**Research environment**: This project is hosted by the Centre for Biomedical Research (CIBM) (http://www.cibm.ch/). CIBM is involved in the INSpiRE project and is particularly known as a world leader in development and implementation of high field MRI/MRS of the brain. This center is the result of a major research and teaching initiative of the partners in the Science-Vie-Société
The INSPiRE-MED (SVS) project, namely the Université de Genève (UniGE), the Université de Lausanne (UNIL) and the EPFL, as well as the corresponding University Hospitals, the Centre Hospitalier Universitaire Vaudois (CHUV) and les Hôpitaux Universitaires de Genève (HUG). The candidate will be part of a team composed of several PhD students and experienced researchers involved in developing new MR methodologies and doing exciting applications of MR spectroscopy and imaging on humans and rodents.

The selected candidate will be able to take advantage of the unique set-up of the INSPiRE-MED network, encompassing 12 academic and 9 industrial partners providing the young researchers with transferable and generic skills as well as a comprehensive, wide-ranging education on the basic principles of medical imaging and image analysis. This multi-disciplinary environment encompasses physics, mathematical and computer sciences, with applications in medicine and biological sciences.

**Your profile:** You should have a master’s degree in physics, biomedical physics, computer science, or a similar degree with an equivalent academic level. A genuine interest in magnetic resonance techniques, magnetic resonance spectroscopy data processing and research should motivate your application. Previous experience in MRI/MRS and programming skills (e.g. matlab) will be a plus. The candidate should be fluent in English and have strong social abilities allowing an active participation to the European network, fruitful exchanges with other students and researchers, and an excellent integration in the team of your research group. You should be ready and able to travel in Europe for the network meetings as well as for sharing the experience of your secondment team.

**Eligibility and Mobility Rule:** Early-Stage Researchers shall, at the time of recruitment by the host organisation, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. At the time of recruitment by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 years immediately prior to the reference date.

**To apply:** Please send your CV and motivation letter to Dr. Cristina Cudalbu, email: cristina.cudalbu@epfl.ch, please add in the email subject “INSPiRE-MED”